

IN THE CLAIMS

1. (Currently Amended) A machine-implemented method comprising:
multiplying [A] by [x] to obtain [y];
wherein said [x] is a matrix of inputs, said [y] is a matrix of outputs, and said [A] is a matrix of predetermined values and multiplication operations; ~~and~~
wherein said multiplication operations within said [A] are paired; and
wherein the method is implemented using machine-implemented Packed Multiply and Add (PMADDWD) instructions.
2. (Original) The method as in claim 1,
wherein said matrix [A] is factored into a butterfly matrix [B], a shuffle matrix [S], and a multiplication matrix [M]; and
wherein multiplication operations within said multiplication matrix [M] are grouped for simultaneous execution.
3. (Original) The method as in claim 1, wherein at least one n-point discrete cosine transform (DCT) is performed.
4. (Original) The method as in claim 3, wherein multimedia compression is performed.
5. (Original) The method as in claim 3, wherein at least one shape adaptive discrete cosine transform (SA-DCT) is performed.
6. (Original) The method as in claim 1, wherein at least one n-point inverse discrete cosine transform (IDCT) is performed.
7. (Original) The method as in claim 6, wherein multimedia decompression is performed.

8. (Original) The method as in claim 6, wherein at least one SA-IDCT is performed.

9. (Original) The method as in claim 1, implemented using single instruction multiple data (SIMD) operations.

10. (Previously Presented) The method as in claim 9, implemented using Multimedia Extension (MMX) operations.

11. (Canceled)

12. (Previously Presented) The method as in claim 1, implemented using at least one of very large scale integration (VLSI) implementation, single processor implementation, and vector processing.

B1 13. (Currently Amended) A machine readable storage medium having executable instructions which, when executed by a machine, cause said machine to perform operations comprising:

 multiplying [A] by [x] to obtain [y];

 wherein said [x] is a matrix of inputs, said [y] is a matrix of outputs, and said [A] is a matrix of predetermined values and multiplication operations; and

 wherein said multiplication operations within said [A] are paired; and

wherein the operations are implemented using machine-implemented Packed Multiply and Add (PMADDWD) instructions.

14. (Original) The machine readable storage medium as in claim 13,

 wherein said matrix [A] is factored into butterfly matrix [B], shuffle matrix [S], and multiplication matrix [M]; and

 wherein multiplication operations within said multiplication matrix [M] are grouped for simultaneous execution.

15. (Original) The machine readable storage medium as in claim 13, wherein at least one n-point DCT is performed.

16. (Original) The machine readable storage medium as in claim 15, wherein multimedia compression is performed.

17. (Original) The machine readable storage medium as in claim 15, wherein at least one SA-DCT is performed.

18. (Original) The machine readable storage medium as in claim 13, wherein at least one n-point IDCT is performed.

19. (Original) The machine readable storage medium as in claim 18, wherein multimedia decompression is performed.

bl 20. (Original) The machine readable storage medium as in claim 18, wherein at least one SA-IDCT is performed.

21. (Original) The machine readable storage medium as in claim 13, implemented using SIMD operations.

22. (Previously Presented) The machine readable storage medium as in claim 21, implemented using Multimedia Extension (MMX) operations.

23. (Canceled)

24. (Currently Amended) The machine readable storage medium as in ~~claim 13~~ claim 13, implemented using at least one VLSI implementation, single processor implementation, vector processing.

25. (Currently Amended) A method comprising performing an n-point DCT or an n-point IDCT wherein multiplication operations and addition operations within said n-point DCT and said n-point IDCT are paired, wherein the method is implemented using machine-implemented Packed Multiply and Add (PMADDWD) instructions.

26. (Original) The method as in claim 25, further comprising performing SA-DCT or SA-IDCT.

B1 27. (Original) The method as in claim 25, implemented using instructions that can execute multiple operations in parallel.

28. (Previously Presented) The method as in claim 27, said instructions being at least one of Multimedia Extension (MMX) operations and Streaming SIMD Extensions.
